



## Truncated telomerase

ATGCCGCGCGCTCCCGCTGCCGAGCCGTGCGCTCCCTGCTGCGCAGCCACTACCGGAGGTGCTGCCGTGGCCAGTTCGTG  
M P R A P R C R A V R S L L R S H Y R E V L P L A T F V

CGGCGCCTGGGGCCCCAGGGCTGGCGGCTGGTGACGCGGGGACCCGGCGGCTTTCGCGCGCTGGTGCCAGTGCTGGTGCGCTGGGACGCAAGGCGGGCCCCCGCGC  
R R L G P Q G W R L V Q R G D P A A P R A L V A Q C L V C V P W D A R P P P A A

CCCTCCTTCGCGCAGGTGCTGCTGAAGGAGCTGGTGCCGAGTGTGCGAGCGCGCGCGAAGAACGTGCTGGCTTCGGCTTCGCGCTGCTGACGGGGCCG  
P S F R Q V S C L K E L V A R V L Q R L C E R G A K N V L A F G P A L L D G A R

CGGGGGCCCCCGAGGCTTACACACAGCTGCGCAGCTACCTGCCAACACGCTGACCGACGCACTGCGGGGAGCGGGCGTGGGGTGTGCTGCTGCGCGCTGGGCGACGACGT  
G G P P E A F T T S V R S Y L P N T V T D A L R G S G A W G L L L R R V G D D V

GCTGGTTACCTGCTGGCAGCTGCGCGCTCTTGTGCTGGTGCTCCAGTGCCTACAGGTGTGCGGGCGCGCTGTACAGCTCGGCGCTGCCACTCAGGCCGGCCCCCGCC  
L V H L L A R C A L P V L V A P S C A Y Q V C G P P L Y Q L G A A T Q A R P P P

ACAGCTAGTGGACCCCGAAGGCTGCGGATGCGAACGGGCTGGAACCATAGCGTCAGGAGGCGGGTCCCCCTGGGCTGCCAGCCCCGGGTGCGAGGAGCGGGGGCAGTGC  
H A S G P R R R L G C E R A W N H S V R E A G V P L G L P A P G A R R R G G S A

CAGCGAAGTCTGCGTTGCCAAGAGGCGCAGGCTGGCGCTGCCCTGAGCGGAGCGGACGCGCTGGGCGAGGGTCTGGGCGCAACCGGGCAGGACGCGTGCACGAGTACCG  
S R S L P L P K R P R R G A A P E P E R T P V G Q G S W A H P G R T R G P S D R

TGGTTTCTGTGGTGTCACTGCCAGACCCGCGCAAGAACCACTCTTGGAGGGTGCGCTCTTGGCACGCGCACTCCCAACCATCCGTGGGCGCGCAGCACCGCGGGCCCCC  
G F C V V S P A R P A E E A T S L E G A L S G T R H S H P S V G R Q H H A G P P

ATCCACATCGCGGCCACCACTCCCTGGGACACGCTTGTCCCCCGGTGTACGCGGAGACCAAGCACTTCTCTACTCTCAGGCGACAAGGAGCAGCTGCGGCCCTCCTTCTACTCAG  
S T S R P P R P W D T P C P P V Y A E T K H F L Y S S G D K E Q L R P S P L L S

CTCTCTGAGGCGCAGCTGACTGGCGCTCGGAGGCTCGTGAGACCATCTTCTGGGTTCCAGGCGCTGGATGCCAGGACTCCCCGAGGTGCCCCGCTGCCCCAGCGCTACTGGCA  
S L R P S L T G A R R L V E T I F L G S R P W M P G T P R R L P R L P Q R Y W Q

AATCGGCGCCCTGTTTCTGGAGCTGCTTGGGAACACGCGCAGTGCCCCCTACGGGGTGCTCTCAAGACGCACTGCCCCGCTGCGAGCTGCGGTACCCAGCAGCGGTGTCTGTGCCG  
M R P L P L E L L G N H A Q C P Y G V L L K T H C P L R A A V T P A A G V C A R

GGAGAAGCCCCAGGGCTCTGTGGCGCCCCCGAGGAGGAGACACAGACCCCGCTCGCTGGTGAGTGTCTCCGCGACACAGCAGCCCCCTGGCAGGTGTACGGCTTCTGTGGGGCTG  
E K P Q G S V A A P E E E D T D P R R L V Q L L R Q H S S P W Q V Y G F V R A C

CCTGCGCGGCTGGTCCCCCAGGCTCTGGGGCTCCAGGCACAACGAACGCGCTTCTCAGGAACCAAGAAGTTCTCTCCTGGGAAGCATGCCAAGCTCTCGTGCAGGAGCT  
L R R L V P P G L W G S R H N E R R F L R N T K K F I S L G K H A K L S L Q E L

GACGTGGAAGATGAGCGTGGGACTGCGCTTGGCTGCGCAGGAGCCAGGGTTGGCTGTGTCCGCGCGCAGAGCACCGTCTGCGTGAGGAGATCCTGGCCAAGTTCTGCACTGGCT  
T W K M S V R D C A W L R R S P G V G C V P A A E H R L R E E I L A K F L H W L

GATGAGTGTGTACGTGCTGAGCTGCTCAGGTCTTTCTTTATGTACGGAGACCAAGTTTCAAAGAAGAGGCTCTTTTCTACCGGAAGAGTGTCTGGAGCAAGTTGCAAAGCATTGG  
M S V Y V V E L L R S F F Y V T E T T F Q K N R L F F Y R K S V W S K L Q S I G

AAT - -NNN - -GACAGTCACAGGGGGTTGACCGCGGACTGGGCGTCCCAGGGTTGACTATAGGACAGGTGCCAGGTGCCCTGCAAGTAGAGGGGCTCTCAGAGGCGTCTGGCTGG  
CATGGTGGACGTGGCCCCGGGATGGCTTCTGCGTGTGCTGCCGTGGTGGCTGAGCCCTCACTGAGTCGGTGGGGCTTGTGGCTTCCCGTGAGCTTCCCCCTAGTCTGTGTGCTG  
GCTGAGCAAGCCTCCTGAGGGCTCTCTATTG...

**FIG. 11A**



# Truncated telomerase (ver. 2)

ATGCCGCGCGCTCCCCGCTGCCGAGCCGTGCGCTCCCTGCTGCGCAGCCACTACCGCGAGGTGCTGCCGCTGGCCACGTTCTGTG  
M P R A P R C R A V R S L L R S H Y R E V L P L A T F V

CGGCGCTGGGGCCCCAGGGCTGGCGGCTGGTGACGCGCGGGGACCCGGCGGCTTTCGCGCGCGTGGTGGCCAGTGCTGGTGTGCGTGGCTGGGACGACGCGCGCCCCCGCGC  
R R L G P Q G W R L V Q R G D P A A P R A L V A Q C L V C V P W D A R P P P A A

GGCCTCCCCGGGTGCGCGTCCGGCTGGGGTGGAGGGCGCGGGGGGAAACAGCGACATGCGGAGAGCAGCGCAGCGACTCAGGGCGCTTCCCCCGCAGGTG  
G L P G V G V R L G L R A A G G N Q R H A E S S A G D S G R F P R R  
A S P G S A S G W G \* G R P G G T S D M R R A A Q A T Q G A S P A G  
P P R G R R P A G V E G G R G E P A T C G E Q R R R R L R A L P P Q V

CCCCCTCTTCGCGCAGGTGTCTGCTGAAGGAGCTGGTGGCCGAGTGCTGCGAGGCTGTGCGAGCGCGGCGGAAGAACGTGCTGGCCTTCGGCTTCGCGTGTGGACGGGGCCCG  
P S F R Q V S C L K E L V A R V L Q R L C E R G A K N V L A P G F A L L D G A R

CGGGGCCCCCGGAGGCTTCACCAACAGCGTGCGCAGCTACCTGCCAACACCGTGACCGACGCACTCGGGGGAGCGGGGCGTGGGGGCTGCTGCTGCGCGCGTGGGCGACGACGT  
G G P P E A F T T S V R S Y L P N T V T D A L R G S G A W G L L L R R R V G D D V

GCTGGTTACCTGTGCGCAGCTGCGCGCTCTTTGTGCTGGTGGCTCCAGCTGCGCCTACCAAGTGTGCGGGCGCGCTGTACAGCTCGGCGCTGCCACTCAGGCGCGGCCCCCGC  
L V H L L A R C A L F V L V A P S C A Y Q V C G P P L Y Q L G A A T Q A R P P P

ACAGCTAGTGGACCCGAGGCGTGGGATGCGAACCGGCTGGAAACATAGCTCAGGAGGCGGGGTCCCCCTGGGCTGCCAGCCCCGGGTGCGAGGAGCGCGGGGCGAGTGC  
H A S G P R R R L G C E R A W N H S V R E A G V P L G L P A P G A R R R R G G S A

CAGCGAAGTCTGCGTGGCCAGAGGCCAGGCGTGGCGCTGCCCTGAGCGGAGCGGACGCCCGTGGGCGGGGTCTGGGCGCCACCGGGCAGGACGCTGGACCGAGTGACCG  
S R S L P L P K R P R R G A A P E P E R T P V G Q G S W A H P G R T R G P S D R

TGGTTCTGTGTTGTACCTGCCAGACCCGCGAAGAAGCCACCTCTTTGAGGGTGGCTCTCTGGCAGCGCCACTCCCACCATCCGTGGGCGCGCAGCACACCGGGCCCCC  
G F C V V S P A R P A E E A T S L E G A L S G T R H S H P S V G R Q H H A G P P

ATCCACATCGCGGCCACCACTCCCTGGGACACGCTTGTCCCCGGTGTACGCCGAGACCAAGCACTTCTCTACTCTCAGGCGACAAGGAGCAGTGGCGCCCTCTCTACTCAG  
S T S R P P R P W D T P C P P V Y A E T K H F L Y S S G D K E Q L R P S F L L S

CTCTGAGGCGCAGCCTGACTGGCGCTCGGAGGCTCGTGAGACCATCTTTCTGGGTTCAGGCGCTGGATGCCAGGACTCCCCGAGGTGCCCCGCTGCCCGAGCGCTACTGGCA  
S L R P S L T G A R R L V E T I F L G S R P W M P G T P R R L P R L P Q R Y W Q

AATGCGGCCCTGTCTTCTGGAGCTGCTTGGGAACACGCGCAGTGCCCTACGGGGTGTCTCTCAAGACGCACTGCCCGCTGCGAGCTGCGGTACCCCCAGCAGCGGTGTCTGTGCCG  
M R P L F L E L L G N H A Q C P Y G V L L K T H C P L R A A V T P A A G V C A R

GGAGAAGCCCCAGGCTCTGTGGCGGCCCGGAGGAGGAGACACAGACCCCGTGGCTGGTGCAGTGTCTCCGCGACACAGCAGCCCTGGCAGGTGTACGGCTCTGTGGCGCCGTG  
E K P Q G S V A A P E E E D T D P R R L V Q L L R Q H S S P W Q V Y G F V R A C

CCTGCGCGGCTGGTGGCCCCAGGCTCTGGGCTCCAGGCACAACGACCGCTTCTCAGGAACACCAAGAGTTCTCTCCCTGGGGAAGCATGCCAAGCTCTGCTGCAGGAGCT  
L R R L V P P G L W G S R H N E R R F L R N T K K P I S L G K H A K L S L Q E L

GACGTGGAAGATGAGCGTGGGACTGCGCTTGGCTGCGCAGGAGCCAGGGTGGCTGTGTTCCGGCCGAGAGCACCGTCTGCGTGAGGAGATCTGGCCAAGTTCTGCACTGGCT  
T W K M S V R D C A W L R R S P G V G C V P A A E H R L R E E I L A K F L H W L

GATGAGTGTGTACGTGCTGAGCTGCTCAGGTCTTTCTTTATGTACGGAGACCACTTTCAAAAGAACAGGCTCTTTTCTACCGGAAGAGTGTCTGGAGCAAGTTGCAAGCAATTGG  
M S V Y V V E L L R S F F Y V T E T T F Q K N R L P F Y R K S V W S K L Q S I G

AAT--NNN--GACAGTACACAGGGGGTTGACCGCGGACTGGGCGTCCCCAGGGTTGACTATAGGACCAAGTGTCCAGGTGCCCTGCAAGTAGAGGGGCTCTCAGAGGCTCTGGCTGG  
CATGGGTGGACGTGGCCCCGGGATGGCCTTCTGCGTGTGCTGCCGTGGGTGCCCTGAGCCCTCACTGAGTGGTGGGGCTTGTGGCTTCCCGTGAGCTTCCCCCTAGTCTGTGTCTG  
GCTGAGCAAGCCTCTGAGGGGCTCTCTATTG...

FIG. 11L